

CLAIMS

What is claimed is:

1. An optical arrangement comprising a plurality of transmitter elements and/or receiver elements, a plurality of diffractive and/or refractive optical elements (20) and an optical system carrier (10) for the diffractive and/or refractive optical elements (20), characterized in that the optical system carrier (10) has diaphragm apertures (11) in whose region the diffractive and/or refractive optical elements (20) are connected to the optical system carrier (10) by means of an injection molding process or of a casting process.
2. An optical arrangement in accordance with claim 1, characterized in that the diffractive and/or refractive optical elements (20) are made as lenses.
3. An optical arrangement in accordance with claim 1, characterized in that the diffractive and/or refractive optical elements (20) are attached to the optical system carrier (10) individually and in particular spaced apart from one another or adjoining one another.
4. An optical arrangement in accordance with claim 1, characterized in that the diffractive and/or refractive optical elements (20) each have at least one undercut (22) into which the rim (12) of the diaphragm aperture (11) engages.
5. An optical arrangement in accordance with claim 1, characterized in that the optical system carrier (10) has, in addition to the diaphragm apertures

(11), additional fastening apertures (13) for the diffractive and/or refractive optical elements (20).

6. An optical arrangement in accordance with claim 5, characterized in that a number of additional fastening apertures (13) are associated with each diaphragm aperture (11), with the additional fastening apertures (13) associated with a diaphragm aperture (11) each being arranged substantially uniformly distributed around this diaphragm aperture (11).

7. An optical arrangement in accordance with claim 1, characterized in that the diffractive and/or refractive optical elements (20) have projections (21) engaging into the fastening apertures (13) and having undercuts (23).

8. An optical arrangement in accordance with claim 1, characterized in that only specific diaphragm apertures (11) are provided with diffractive and/or refractive optical elements (20).

9. An optical arrangement in accordance with claim 1, characterized in that the diaphragm apertures (11) are made as diaphragm tubes.

10. An optical arrangement in accordance with claim 1, characterized in that the optical system carrier (10) consists of light-impermeable material, in particular of metal or plastic.

11. An optical arrangement in accordance with claim 1, characterized in that the optical system carrier (10) is made as a stamped strip.

12. An optical arrangement in accordance with claim 1, characterized in that the optical system carrier (10) is made as a strip which can be cut to length.

13. An optical arrangement in accordance with claim 1, characterized in that the optical system carrier (10) has recesses (14) in its marginal region.

14. An optical arrangement in accordance with claim 1, characterized in that the optical system carrier (10) is made as a rigid element or as flexible, in particular windable.

15. An optical arrangement in accordance with claim 1, characterized in that the transmitter elements and/or the receiver elements are arranged on a rigid or flexible electronic system carrier (30), preferably on an electronic board.

16. An optical arrangement in accordance with claim 15, characterized in that the electronic system carrier (30) provided with the transmitter elements and/or with the receiver elements and the optical system carrier (10) are connected to one another to form a unit by means of a snap connection (40).

17. An optical arrangement in accordance with claim 16, characterized in that the unit, consisting of the optical system carrier (10) provided with diffractive and/or refractive optical elements (20) and of the electronic system carrier (30) connected thereto and provided with the transmitter elements and/or the receiver elements, is arranged in an extrusion section (60), preferably in an aluminum section.

18. An optical arrangement in accordance with claim 17, characterized in that the extrusion section (60) is made in U shape.

19. An optical arrangement in accordance with claim 17, characterized in that the extrusion section (60) has holding grooves (70) for the optical system carrier and/or the electronic system carrier (30).

20. A light grid having at least one optical arrangement in accordance with claim 1.

21. A method for the manufacture of an optical arrangement comprising a plurality of transmitter elements and/or receiver elements, a plurality of diffractive and/or refractive optical elements (20) and an optical system carrier (10) for the diffractive and/or refractive optical elements (20), characterized in that in a first method step, the optical system carrier (10) is at least provided with diaphragm apertures (11), in a further method step, the diffractive and/or refractive optical elements (20) are connected to the optical system carrier (10) in the region of the aperture openings (11) by means of an injection molding process or of a casting process.

22. A method in accordance with claim 21, characterized in that a single optical element (20) or a group of optical elements (20) are connected to the optical system carrier (10) by means of a single injection molding process or casting process.

23. A method in accordance with claim 21, characterized in that the connection of the diffractive and/or refractive optical elements (20) to the optical system carrier (10) takes place in a quasi endless method, with the optical system carrier (10) present in wound-up form being unwound and being supplied to the injection molding machine or casting machine; and in that, subsequently, the optical system carrier (10) provided with the diffractive and/or refractive optical elements (20) is cut to length.